



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/939,332	08/24/2001	Farahmand E. Askarinam	5102/ETCH/DICP	3618

7590 05/08/2002
Patent Counsel
Applied Materials, Inc.
3050 Bowers Avenue
P.O. Box 450A
Santa Clara, CA 95052

EXAMINER

CROWELL, ANNA M

ART UNIT	PAPER NUMBER
----------	--------------

1763

4

DATE MAILED: 05/08/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/939,332

Applicant(s)

ASKARINAM ET AL.

Examiner

Michelle Crowell

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 ~~1 and 6-25~~ is/are pending in the application.
- 4a) Of the above claim(s) 2-5 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☒ Claim(s) 1-25 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.

- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

DETAILED ACTION

Election/Restrictions

1. This application contains claims directed to the following patentably distinct species of the claimed invention:

Species I – Figure 3

Species II – Figure 6

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claim 1 is generic.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. During a telephone conversation with Joseph Pagnotta on Thursday, May 2, 2002 a provisional election was made with traverse to prosecute the invention of Species I, claims 1 and 6-25. Affirmation of this election must be made by applicant in replying to this Office action. Claims 2-5 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

3. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1, 8 and 9 are rejected under 35 U.S.C. 102(a) as being anticipated by Bang et al. (U.S. 6,110,556).

Art Unit: 1763

Referring to Figures 2 and 3, and column 4, lines 45-50, and column 5, lines 13-56, Bang discloses a chemical vapor deposition chamber comprising a vacuum lid 20 with base plate 48 (roof), a central recess 68 located in the bottom surface of the base plate 48, two gas distribution plates 72 and 88 mounted within the central recess 68, and opening 54 which supplies gas (gas feed channel). In addition, a plurality of gas dispersion apertures 75 and 90 are provided in each gas distribution plate 72 and 88.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 6, 7, 10-13, 16-19, 21-23, and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Bang et al. (U.S. 6,110,556) in view of Collins et al. (U.S. 6,077,384), Wicker et al. (U.S. 6,129,808), and Wu (U.S. 5,910,221).

Bang fails to teach that the roof and gas distribution plate are made and covered with silicon carbide.

Referring to Figures 35A-E and 36A-B, column 16, lines 21-27, and column 27, lines 11-66, Collins teaches a plasma reactor with a ceiling 110 (roof) made from silicon carbide. This material allows the ceiling 110 to act as a conductor that can be grounded and act as a non-conductor to transmit a RF induction field from an antenna.

Referring to Figure 8, and column 5, lines 10-43, column 6, lines 34-48, column 7, lines 31-50, and column 12, lines 16-24, Wicker teaches that it is known for a gas distribution plate

Art Unit: 1763

120 to be made from or coated with silicon carbide. This material has the desirable characteristics of high etch resistance, non-contaminating elements, and volatile etch products.

Referring to Figure 6, column 5, lines 46-53, column 6, lines 27-50, Wu teaches coating the plasma reactor's base plate 98 (roof) with a silicon carbide film 54. Moreover, the silicon carbide film is deposited using chemical vapor deposition (CVD). Silicon carbide CVD films reduce the production of particles and resultant contamination.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Bang with a roof and gas distribution plate made from and covered with silicon carbide. This would provide high resistance to etch gases, and therefore prolong the life of the parts.

8. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bang et al. (U.S. 6,110,556) in view of Collins et al. (U.S. 6,077,384), Wicker et al. (U.S. 6,129,808), and Wu (U.S. 5,910,221) as applied to claims 6, 7, 10-13, 16-19, 21-23, and 25 above, and further in view of Fischer (U.S. 5,422,139).

Bang in view of Collins, Wicker, and Wu fails to show grooves with apertures inside the grooves.

Referring to Figures 8 and 9, column 9, line 60 – column 10, line 21, Fischer shows a gas distribution plate with grooves 39 disposed in plate 37. Each groove contains bores 5a (plurality of apertures) for gas dispersion. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the apparatus of Bang in view of Collins, Wicker, and Wu with the grooves with bores as shown by Fischer. This would allow the gas to be evenly distributed in the chamber.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle Crowell whose telephone number is (703) 305-1956. The examiner can normally be reached on M-F (8:00 - 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Mills can be reached on (703) 308-1633. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

AMC *ame*
May 6, 2002

[Signature]
GREGORY MILLS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700